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TITLE

An Adhesive Composition and Use of Such Composition

BACKGROUND OF THE INVENTION

5 1. Field of the Invention

The present invention relates to pressure sensitive adhesive compositions suitable for various medical applications and especially suitable for use for adhesion to the skin, in particular in the field of wound care, ostomy care, and continence care. More specifically, this invention relates to adhesive compositions comprising a rubbery elastomeric base and one or more water-soluble and/or water binding constituents dispersed therein, a method controlling the absorption and transmission properties of adhesive compositions, a method for production of such adhesive compositions, the use of such adhesive compositions for the preparation of a wound dressing or an adhesive wafer for an ostomy appliance, and to wound dressings or ostomy appliances comprising such adhesive composition and for attaching medical appliances to the skin.

The present invention relates more specifically to pressure sensitive adhesive compositions comprising one or more amphiphilic copolymers and the use of such compositions for obtaining stable moisture absorbing and transmitting adhesives.

2. Description of the Related Art

Pressure sensitive adhesives may be formulated in various manners. Some adhesives will be formulated using polymers polymerised from monomers, oligomers or prepolymers and formulated to the final adhesive using conventional further constituents or additives potentially with addition of some adhesive modifying agent, which may be activated using UV- or EB radiation. Other adhesives may be prepared through solutions in a suitable solvent or compounded using hot melt technology from a matrix-forming polymer, tackifying resin, plasticizer and preservative and still other adhesives may be formulated from emulsions of plasticized droplets or solutions of a full compounded formula. In either case the

formulations typically will be applied to a suitable substrate for instance a silicone paper and radiated, dried or cooled.

5 The principal component in the pressure sensitive adhesive will be typically a synthetic rubber. Some typical rubbers are polyisoprene, butyl rubber, polyisobutylene, styrene-block copolymers, acrylates, amorphous poly- α olefins, ethylene vinyl acetate, ethylene butyl or methyl acrylate, silicones and polyurethanes. Some of these polymers may be adhesives per se due to a suitable balance between low, medium and high molecular weight constituents whereas other rubbers need compounding with tackifier resins, plasticizers, antioxidants and various types of fillers for reaching suitable adhesive properties. Depending on type of use the adhesive composition will be chosen from one of the categories of rubbers above and will further be compounded for being imparted desired properties functionality. In case of adhesives for packaging tape this may be ability to removal under wet conditions for removal of labels. In case of medical adhesives it may be the ability of transmission of moisture from the skin.

20 Adhesive compositions for use on skin are most typically derived from the groups of acrylic polymers, block copolymers or polyisobutylenes. The acrylics will most often be used for tapes opposed to block copolymers and polyisobutylenes often being used in hydrocolloid adhesives. While the acrylic adhesives when used for tapes typically will be in the form of a thin adhesive layer applied at a non-woven or film backing the two latter types will typically be used in the form of thick layers of adhesive. In the acrylic type, the water absorption and transmission is normally achieved through balanced polarity of the acrylic adhesive. In the two latter types, the absorption and transmission is typically achieved through the use of hydrocolloid particles. These particles are embedded as a discrete heterogeneous phase in the adhesive and are able to absorb moisture, swell and transmit the moisture across the adhesive to the opposite surface.

30 One major problem which has been encountered with conventional adhesive compositions comprising hydrocolloids is their susceptibility to breakdown upon

exposure to body fluids. When the compositions are used as skin barriers, e.g. for bandaging wounds or for use around stomas, or for securing devices, such as uridomas, absorption of fluid is desirable, but excessive swelling causes the composition to lose its integrity and thus increase the risk of incidence of leaks and the barrier must be replaced more often than is desirable from a skin protection point of view, and very often, a residue remains on the skin, which in many cases is difficult to remove.

Adhesive agents are also employed for securing orthoses and prostheses (e.g. breast prostheses) and for protection of skin areas or parts of the body against pressure, impact and friction. In these cases it is primarily the secretion of perspiration that may cause swelling and disintegration of the adhesive agent. When removing the adhesive agent remnants may be left on the skin, involving the inconveniences earlier mentioned.

Another major problem for conventional adhesive compositions comprising hydrocolloids is their limited capability in adhering to moist body surfaces. There is particularly a need for an improved adhesive composition having an enhanced adhesion to moist skin in the management of ostomy patients, as it is often difficult to keep the skin around stomas or wounds or the area for attaching an uridoma completely dry during replacement of an ostomy appliance.

The present invention provides in its broadest aspect a new manner of more precisely controlling and tailoring the wet tack and moisture transmission properties of adhesive compositions.

SUMMARY OF THE INVENTION

The present invention relates to moisture absorbing and transmitting adhesives i.e. it relates to both the field equivalent to hydrocolloid adhesives and to skin tape adhesives.

Further the present invention relates to the introduction of amphiphilic block copolymers for achieving controlled moisture absorption.

Detailed Description of the Present Invention

- 5 In its broadest aspect the invention relates to a pressure sensitive adhesive composition comprising a rubbery elastomeric matrix, said composition comprising one or more amphiphilic polymers.

10 One embodiment the invention relates to a pressure sensitive adhesive composition comprising a rubbery elastomeric base comprising a matrix comprising one or more first block-copolymers comprising blocks capable of forming a physically cross-linked matrix, said matrix also comprising one or more amphiphilic block-copolymers comprising one or more hydrophobic polymer blocks, and one or more hydrophilic polymer blocks.

15 The introduction of an amphiphilic block copolymer having hydrophobic blocks and hydrophilic blocks in which the hydrophobic blocks are compatible in an adhesive matrix has surprisingly shown that the matrix provides an improved adhesion in moist environment and that transmission and absorption of moisture may
20 be controlled in a simple manner. This is believed to be due to that the compatibility of one or more blocks of the polymer in the matrix and the lack of compatibility of other blocks lead to introduction of incompatible hydrophilic segments or domains within the adhesive. Hence, an adhesive having heterogeneous phases with a hydrophobic phase and a hydrophilic separate discontinuous phase is obtained. As the hydrophilic segmented phase is covalently linked to polymer blocks
25 and as these blocks are bonded into the continuous hydrophobic phase of the adhesive said adhesive will be stable and not lead to phase migration and leaching of the incompatible hydrophilic phase.

30 The improved adhesion in moist environment is ascribed to the fact that the amphiphilic polymer is present also at the surface of the adhesive agent and thus is able to cause an immediate absorption of water. Due to the ability of the amphiphilic polymer to absorb water, the amount of hydrocolloids in the form of tradi-

tional hydrocolloid particles may be reduced and it is even possible to avoid such hydrocolloids in the adhesive of the invention. The improved cohesion of the adhesive allows for a complete removal of the adhesive after the period of service without leaving residues on the skin when used for securing an ostomy appli-

5 ance. Furthermore, an amphiphilic polymer is better anchored in the matrix of the adhesive composition reducing the risk of disintegration of the adhesive matrix upon absorption of humidity and also the risk of leaching of the amphiphilic polymer. The homogeneous distribution of the amphiphilic polymer in the matrix enables a controlled moisture absorption and transmission of moisture from the skin

10 side to the opposite side from which it may be released to the environment. The adhesive compositions of the invention are suitable for applications in the medical field for instance for adhering of medical devices to the skin. The skin has a need of perspiring, also when occluded with medical appliances. Many publications indicate that complete occlusion of the skin leads to maceration and

15 potential skin damages arising therefrom. This is probably the reason for the huge success of the so-called hydrocolloid adhesives as described in e.g. in US Patents Nos. US 3,339,546, US 4,23,369 and 4,367,732.

The adhesive compositions of the invention are especially suitable for use for

20 medical appliances such as ostomy bags, wound dressings, IV-fixations, adhesive surgical drapes, skin fixation of continence catheters, drains, breast prosthesis and monitoring devices. But the purpose of the adhesive of the invention also relates to any other application associated to skin of any mammal. Further as

secondary fields the adhesive will be suited for a wide number of industrial appli-

25 cations like for labels and stickers that should be wet or moisture sensitive due to for instance easy removal.

Thus, it is preferred that the first block-copolymer comprising blocks capable of forming a physically cross-linked matrix is selected from block-copolymers comprising

30 styrene and one or more olefins.

In a second embodiment of the invention the rubbery elastomeric matrix comprises poly butylenes or isobutylene.

5 In a third embodiment of the invention the rubbery elastomeric matrix comprises a poly siloxane.

In a fourth embodiment of the invention the rubbery elastomeric matrix comprises an amorphous poly alfa-olefine.

10 In a fifth embodiment of the invention the rubbery elastomeric matrix comprises a polymer derived from polyacrylic acid.

It is preferred that the first block-copolymer is selected from block-copolymers comprising styrene and one or more polyolefins being suitable for the purpose of
15 the present invention and also being readily available.

The first block-copolymer is preferably selected from block-copolymers comprising styrene and one or more dienes, preferably butadienes, being suitable for the purpose of the present invention, and preferably the first block-copolymer is a
20 styrene-isoprene-styrene copolymer.

In a preferred embodiment of the invention the amphiphilic polymer contains hydrophobic blocks compatible with the styrene polymer blocks of the first block-copolymer being recognised as suitable for production of adhesives for use on
25 human skin and the amphiphilic polymer preferably also contains styrene.

In an alternative embodiment of the invention the amphiphilic polymer contains acrylic hydrophobic blocks

30 In a further alternative for use in accordance with the present invention the amphiphilic polymer contains blocks from a vinylic unsaturated aliphatic hydrocarbon comprising from 1 to 6 carbon atoms.

It is preferred that the vinylic unsaturated hydrocarbon comprises 4 carbon atoms being suitable for the purpose of the present invention, and the unsaturated hydrocarbon is polybutylene or polyisobutylene

- 5 In a preferred embodiment of the invention the composition comprises one or more hydrophilic homopolymers or heteropolymers being compatible with the hydrophilic blocks of the amphiphilic polymer.

10 In accordance with this embodiment of the invention the capacity of moisture absorption and transmission of the heterogeneous hydrophilic phase is improved by addition of homopolymers of the same type of polymer as being present in the hydrophilic phase i.e. the hydrophilic blocks of the amphiphilic polymer and/ or with other homopolymers or heteropolymers which are compatible with the hydrophilic phase.

15 For practical reasons a certain level of the hydrophilic disperse phase is required for achieving a sufficient water transmission rate being required for medical tapes and adhesives. More than 5% by volume should be present, but preferably between 20 and 40 % by volume of the hydrophilic domains are required depending
20 on type of type of adhesive. Still further at least 5% of these domains but preferably more than 20% of these should be provided by the amphiphilic polymer.

25 In one embodiment of the invention the hydrophilic block of the amphiphilic copolymer comprises a polyethylene oxide, preferably a homopolymer of polyethylene oxide.

In another embodiment of the invention the hydrophilic homopolymer and the hydrophilic block of the amphiphilic copolymer are polyacrylates.

30 It is also considered an embodiment of the invention to that the composition comprises a plasticizer being compatible with the hydrophilic polymer if a modifi-

cation of the polymer is suitable for obtaining the desired absorption and transmission capacity combined with a suitable softness of the composition.

5 It is also considered an aspect of the present invention to compound an adhesive composition of the invention with an amount of plasticizer conventionally used for the matrix-forming polymer to provide a composition with sufficiently low elasticity and corresponding high plasticity to enable the use of the composition as a paste showing adhesive properties, e.g. as an ostomy paste having low or no memory.

10 Suitably the plasticizer is selected from the group comprising glycerol, glycols and esters thereof with lower aliphatic acids having up to 6 carbon atoms or esters of such acids with a lower aliphatic alcohol having up to 6 carbon atoms.

15 In a further embodiment of the invention the composition comprises hydrocolloid particles.

The presence of hydrocolloid particles being characterized by rapid swelling under influence of water may further improve moisture uptake and transmission. A disadvantage may be the lack of complete coherence at high loads of hydrocolloid particles of such adhesives when immersed in water over time but this may
20 be compensated by a desired absorption capacity in some cases. The addition of hydrocolloid particles will preferably be in the range of 10-30 % but will not be limited to this range.

25 Such hydrocolloid particles are suitably naturally occurring hydrocolloids such as guar gum, locust bean gum, pectin, alginates, gelatine, xanthan or karaya gum, semisynthetic hydrocolloids such as cellulose derivatives, e.g. salts of carboxymethylcellulose, methylcellulose and hydroxypropylmethylcellulose, sodium starch glycollate and synthetic hydrocolloids such as polyvinyl pyrrolidone, poly-
30 vinyl alcohol, polyethylene glycol or certain polyacrylates.

The amphiphilic polymer suitably consists of a polymeric chain being apolar coupled with a polar polymeric chain. More in particular the polar chain end of the polymer must be water-soluble or water swellable to at least a content of 300% water if decoupled from the a-polar polymeric chain. The a-polar chain shall when
5 emerged in water not take up more than 10% of water.

The polymers are made from two or more monomers each of which are grouped together. The polymers may for instance be a diblock from monomers A and B having a structure AAAAABBBBBB, a triblock having a structure like
10 AAAABBBBBBAAAA as well as star-shaped or multibranched block copolymer structures.

One of the blocks must be compatible with the matrix of the adhesive composition in question whereas the other block must form or take part in a separate incompatible domain.
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The hydrophobic block being compatible with the matrix of a given adhesive may typically be any type of polymer or oligomer resembling the chemical structure of the matrix of the adhesive. This may be exemplified through a number of various
20 adhesive principles: In a Styrene-Isoprene block copolymer adhesive the hydrophobic block should be compatible with the segment of polyisoprene or in the polystyrene domain. The polyisoprene segment contains in such adhesives tackifying resin and plasticizer and will allow significant macromolecular movement opposed to the polystyrene domains. Hence preferred linking of the amphiphilic
25 compound will be to the styrene segments, which eliminates any risk of leaching or phasing out of the hydrophilic polymer in the adhesive formulation. Another example will be adhesives with polyisobutylene matrix in which case the hydrophobic block of the amphiphilic polymer must be compatible with polyisobutylene or at least with this compounded with a tackyfier resin. Yet another example is
30 adhesives with acrylic polymer as matrix in which case the hydrophobic block of the amphiphilic polymer must be compatible with the polyacrylic adhesive backbone.

Hence the hydrophobic part of the amphiphilic block copolymer may be polystyrene, polyisobutylene, polybutylene, poly alpha-olefine, poly acrylate, and polysiloxane or similar commonly used backbone polymers in pressure sensitive adhesive formulations.

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The hydrophilic block of the amphiphilic block copolymer may be any type of polymer that will be able to absorb significant amounts of water. If taken alone the hydrophobic part of the amphiphilic polymer the hydrophilic block must preferably be water-soluble or at least highly water absorbing. Suitable hydrophilic polymers for use in amphiphilic polymers for use in accordance with the present invention are PEG (polyethylene glycol), PVP (polyvinyl pyrrolidone), salts of polyacrylic acid, salts of polymers of composed with other acids like maleic acid, polyvinyl alcohol or carbohydrates or gelatins. The hydrophilic block should preferably have a certain minimum molecular weight of at least about 500 to be able to form separate hydrophilic domains in the adhesive. Most preferred the size should be more than 1000 in case of end blocks and 5000 in case of midblocks.

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The adhesive according to the invention may be processed in analogy with conventional methods for preparing thermoplastic adhesives. The preferred method will be by hot melt processes. This includes blending in hot melt mixers like Z-blade mixers, single or double barrel extruders, planet-mixers or equivalent equipment followed by a coating or moulding step to given substrates or release liners. Alternatively the adhesive may be cast from a solution at suitable release liners or backings and added any net or non-woven for reinforcing or improving handling. Still further the adhesive may be foamed, coated or formed into any desired thickness or shape.

Description of the Preferred Embodiments

The invention is now explained more in detail with reference to the Examples showing preferred embodiments of the invention.

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Preparation of the adhesives according to the invention

Example 1

An adhesive composition A is produced by hot melt mixing in a Z-blade mixer at elevated temperature (130-145 deg C) over a period of 75 minutes in an atmosphere of nitrogen. The adhesive composition is divided in suitable portions for further mixing with the amphiphilic polymer and optionally a hydrophilic homopolymer compatible with the hydrophilic blocks of the amphiphilic polymer. The mixing is performed in same equipment at 120 deg C and over 20 minutes in the nitrogen atmosphere.

The adhesive A is composed of:

Styrene Isoprene Block copolymer (Kraton TR1107, Shell) 23.3g
C5-C9 tackifier resin (Arkon P 90, Arakawa) 35.2g
Plasticizer: Dioctyl adipate 4.1g
Antioxidant (methylene bis-(4-methyl-6-t-butylphenol)) 1.25 g

The amphiphilic polymer is:

Styrene-polyethylene oxide copolymer ((Mn 71000/ 374200)(Polymersource)

The homopolymer is:

Polyethylene oxide (MW 100,000) (Polyox WSR N-10)

The compositions of the adhesives produced are shown in the table 1:

Table 1

	Adhesive composition A	Amphiphilic polymer	Homopolymer
Adhesive 1	70.0 %	30.0 %	
Adhesive 2	80.0 %	10.0 %	10.0 %
Adhesive 3	70.0 %	10.0 %	20.0 %
Adhesive 4	100.0 %		

Example 2

The compositions of example 1 are evaluated in respect to absorption of moisture. 0,5 mm thick adhesives in 2.5 by 2.5 cm square specimen are adhered to a plate of glass. The adhesives will have the opposite side uncovered. The plates with adhesives are immersed in physiological saline at 36 deg C and the weight gain over a period of 1500 minutes is determined and are stated in the below table 2.

Table 2

	Weight gain 1500 minutes
Adhesive 1	7.5%
Adhesive 2	6.5%
Adhesive 3	11.5%
Adhesive 4	19.0 %
Adhesive 5	2.0%

Example 3

Using the method stated in Example1 and adhesive composition A, polystyrene-polyethylene oxide- polystyrene copolymer (Mn: 9500/ 48000/ 9500) (Polymer-source) as the amphiphilic copolymer, polyethylene oxide (MW 100,000) (Polyox WSR N-750) as a homopolymer, and polyethylene glycol (MW 300) (BASF) as a hydrophilic plasticizer the compositions 5-8 stated in the below Table 3 are produced.

Table 3

	Adhesive composition A	Amphiphilic polymer	Homopolymer	Hydrophilic plasticizer
Adhesive 5	80.0 %	20.0 %		
Adhesive 6	80.0 %	10.0 %	10.0 %	
Adhesive 7	75.0 %	10.0 %	10.0 %	5.0 %
Adhesive 8	100.0 %			

Example 4

- 5 An adhesive composition B is made by mixing polyisobutylene and butyl rubber in a Z-blade mixer at 120 degree C during 45 minutes under a nitrogen atmosphere. The composition B is divided into portions which are further compounded to the final compositions by addition of amphiphilic polymer, hydrophilic compatible homo or heteropolymer and a plasticizer at 120 deg C during mixing for 15 minutes.

The resulting adhesives have the formulations 9-13 as stated in the below Table 4 in which:

Composition B consists of:

- 15 polyisobutylene: Vistanex LMMH (Exxon)

butyl rubber is: Bayer Butyl 101-3 (Bayer)

and the additional components are:

The amphiphilic polymer is: Poly(butadiene(1,4 addition)-b-sodium acrylate) (Mn: 110,000/ 17,000) (Polymersource)

- 20 The hydrophilic heteropolymer is: Polypropylene/ polyethylene glycol (Pluronic PE 10.500/ BASF)

The hydrophilic plasticizer 1 is: Propylene glycol

The hydrophilic plasticizer 2 is: Demineralised water

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Table 4

Composition	Composition B	Amphiphilic polymer	Homopolymer	Hydrophilic plasticizer 1	Hydrophilic plasticizer 2
Adhesive 9	80.0 %	10.0 %	5.0 %	5.0 %	
Adhesive 10	70.0 %	20.0 %	9.0 %		1.0 %
Adhesive 11	60.0 %	20.0 %	15.0 %	5.0 %	
Adhesive 12	60.0 %	20.0 %	15.0 %		5.0 %
Adhesive 13	70.0 %	10.0 %	20.0 %		

Example 5

- 5 An adhesive composition C is produced by hot melt mixing in a Z-blade mixer at elevated temperature (130-140 deg C) over a period of 60 minutes in an atmosphere of nitrogen. After 60 minutes full macroscopic homogeneity has been achieved and the composition is split in three portions and added hydrocolloid particles under reduced pressure for preparation of the compositions 14-17
- 10 stated in the below table 5.

Composition C:

The adhesive A is composed of:

Styrene Isoprene Block copolymer (Kraton TR1107, Shell) 20,0 g

- 15 C5-C9 tackifier resin (Arkon P 90, Arakawa) 26,0 g

Plasticizer Dioctyl adipate 5,5 g

Antioxidant (methylene bis-(4-methyl-6-t-butylphenol)) 1,25 g

Amphiphilic polymer

(Styrene-polyethylene oxide (Mn 71000/ 374200)(Polymersource)) 10,0 g

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Other materials:

NaCMC: Aquasorb from Aqualon

PVP (polyvinyl pyrrolidone) K90 from ISP

Pectin: Pomosin LM-12CG-Z (CP Kelco)

Gelatin: Gelatin PB220 (PB Gelatines)

Table 5

	Adhesive composition C	NaCMC	PVP	Pectin	Gelatin
Adhesive 14	80 %	20 %			
Adhesive 15	80 %		20 %		
Adhesive 16	70 %	10 %		10 %	10 %
Adhesive 17	90 %		10 %		

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Claims

1. A pressure sensitive adhesive composition comprising a rubbery elastomeric matrix, said composition comprising one or more amphiphilic polymers.
- 5 2. A pressure sensitive adhesive composition according to claim 1, characterized in that it comprises a rubbery elastomeric base comprising a matrix comprising one or more first block-copolymers comprising blocks capable of forming a physically cross-linked matrix, said matrix also comprising one or more amphiphilic
10 block-copolymers comprising hydrophobic polymer blocks, and one or more hydrophilic polymer blocks.
3. An adhesive composition according to claim 1 or 2, characterized in that the first block-copolymer comprises blocks capable of forming a physically cross-
15 linked matrix is selected from block-copolymers comprising one or more styrene blocks.
4. A pressure sensitive adhesive according to claim 1 characterised in that the rubbery elastomeric matrix comprises poly butylenes or isobutylene.
- 20 5. A pressure sensitive adhesive according to claim 1 characterised in that the rubbery elastomeric matrix comprises a poly siloxane.
6. A pressure sensitive adhesive according to claim 1 characterised in that the
25 rubbery elastomeric matrix comprises an amorphous poly alfa-olefine.
7. A pressure sensitive adhesive according to claim 1 characterised in that the rubbery elastomeric matrix comprises a polymer derived from polyacrylic acid.
- 30 8. An adhesive composition according to claim 3, characterized in that the first block-copolymer is selected from block-copolymers comprising styrene and one or more butadienes.

9. An adhesive composition according to any of claims 1-8, characterized in that the amphiphilic polymer contains hydrophobic blocks compatible with the matrix of the adhesive.

5 10. An adhesive composition according to any of claims 1-9, characterized in that the amphiphilic polymer contains styrene blocks.

11. An adhesive composition according to any of claims 1-9, characterized in that the amphiphilic polymer contains acrylic hydrophobic blocks

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12. An adhesive composition according to any of claims 1-9, characterized in that the amphiphilic polymer contains blocks from a vinylic unsaturated aliphatic hydrocarbon comprising from 1 to 6 carbon atoms.

15 13. An adhesive composition according to any of claims 1-12, characterized in that it comprises one or more hydrophilic homopolymers or heteropolymers being compatible with the hydrophilic blocks of the amphiphilic polymer.

20 14. An adhesive composition according any of claims 1-13, characterized in that the hydrophilic block of the amphiphilic copolymer is a polyethylene oxide or a poethyleneglycol.

15. An adhesive composition according claim 13 or 14, characterized in that it comprises a homopolymer of polyethylene oxide.

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16. An adhesive composition according any of claims 1-13, characterized in that the hydrophilic homopolymer and the hydrophilic block of the amphiphilic copolymer are hydrophilic polyacrylates.

30 17. An adhesive composition according any of claims 1-13, characterized in that the hydrophilic block of the amphiphilic copolymer is a hydrophilic polvinyl compound.

18. An adhesive composition according to claim 17, characterised in that the hydrophilic polvinyl compound is a polyvinyl pyrrolidone.

19. An adhesive composition according to any of claims 1-18, characterized in
5 that it comprises a plasticizer being compatible with the hydrophilic polymer.

20. An adhesive composition according to any of claims 1-19, characterized in that it comprises hydrocolloid particles.

Abstract**An Adhesive Composition**

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The present invention relates to a pressure sensitive adhesive composition comprising a rubbery elastomeric base comprising a matrix comprising one or more first block-copolymers comprising blocks capable of forming a physically cross-linked matrix, said matrix also comprising one or more amphiphilic block-

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copolymers comprising hydrophobic polymer blocks, and one or more hydrophilic polymer blocks are suitable for application in the medical field for instance for adhering of medical devices to the skin and provides a quick and safe means for managing perspiration from the skin also when occluded with medical appliances.

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